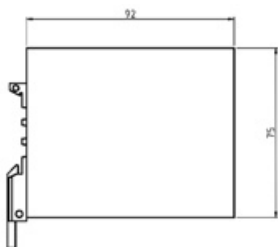
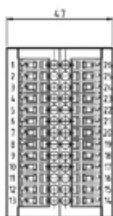


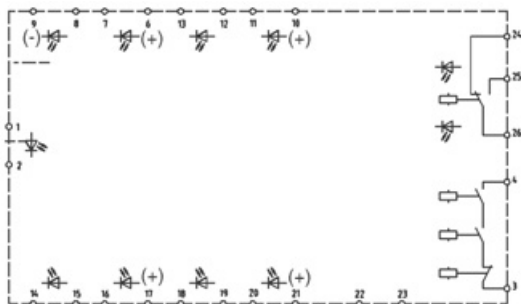


462 121 E1
462 121 E1 01
462 121 E1 U
462 121 E1 U1
462 124 E1
462 124 E1 U
462 124 E1 01
462 124 E1 10
462 124 E1 U1

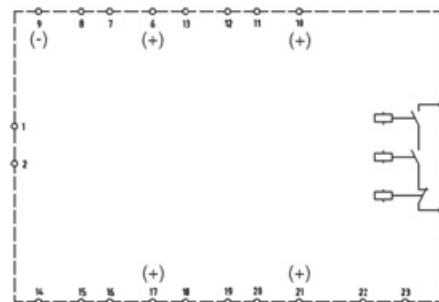
- D** Betriebsanleitung
Auswerteeinheit
- GB** Operating instructions
Control unit
- F** Notice d'utilisation
Unité de contrôle
- I** Istruzioni d'impiego
Unità di controllo



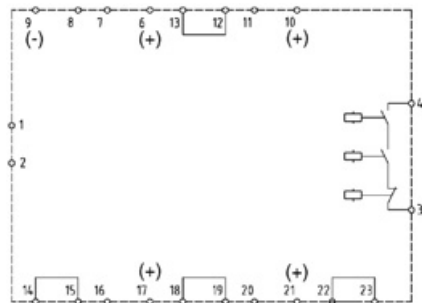
462 121 E1 01, 462 121 E1 U1,
462 124 E1 01, 462 124 E1 U1



462 121 E1, 462 121 E1 U, 462 124 E1,
462 124 E1 U



462 124 E1 10



1 Technical data

1.1 Terminal assignment

General

Terminal	Assignment
1, 2	Operating voltage
3, 4	Safety output contact maker, floating
5	Not assigned
6, 7	Input sensor 1, contact breaker
8, 9	Input sensor 1, contact maker (to be bridged, if not needed)

Models 462 121 E1, 462 121 E1 U, 462 124 E1, 462 124 E1 U

Terminal	Assignment
10, 11	Input sensor 2, contact breaker
12, 13	Input sensor 2, contact maker (to be bridged, if not needed)
14, 15	Input sensor 3, contact maker (to be bridged, if not needed)
16, 17	Input sensor 3, contact breaker
18, 19	Input sensor 4, contact maker (to be bridged, if not needed)
20, 21	Input sensor 4, contact breaker
22, 23	External contactor (to be bridged, if not needed)
24, 25, 26	Not assigned

Model 462 124 E1 10

Terminal	Assignment
10 ... 23	Do not connect to these terminals
24, 25, 26	Not assigned

**Models 462 121 E1 01, 462 121 E1 U1, 462 124 E1 01,
462 124 E1 U1**

Terminal	Assignment
10, 11	Input sensor 2, contact breaker
12, 13	Input sensor 2, contact maker (to be bridged, if not needed)
14, 15	Input sensor 3, contact maker (to be bridged, if not needed)
16, 17	Input sensor 3, contact breaker
18, 19	Input sensor 4, contact maker (to be bridged, if not needed)
20, 21	Input sensor 4, contact breaker
22, 23	External contactor (to be bridged, if not needed)
24	Control output contact breaker, floating
25	Control output contact maker, floating
26	Control output, common ground for 24 and 25

1.2 Type denomination/Variants

The following example and table are given to explain the type denomination of the control units.

Example:

462 121 E1 U1

4ab cde fg hi

Placeholder	Characteristic		Meaning
4ab	Housing type and housing width	462	Housing width 47 mm
		463	Housing width 25 mm
cd	Specification safety input	12	Control unit for contact makers/ breakers for sensors
e	Operating voltage	1	24 V AC/DC
		4	230 V AC

Placeholder	Characteristic		Meaning
f	Other	E	Category 3 according to EN 954-1
g	Other	1	Insignificant
h	Other	0	Insignificant
		1	Customer-specific, terminals 10 to 23 partially internally bridged
		U	No cooling-off period
i		0	Insignificant
		1	Control output and LED displays present

1.3 Electrical and mechanical data

The control unit in a deenergized state is depicted on the circuit diagram of the fold-out page.

General

Back-up fuse for operating voltage	1.0 A
Fuse, safety output	3.0 A
Safety output, max. switching voltage	250 V AC; 30 V DC
Safety output, max. switching current	3 A
Safety output, max. switching capacity	750 VA or 90 W
Operating temperature	0 ... +55 °C
Transport and storage temperature	-25 ... +85 °C
Vibration and shock resistance	Vibration: 10 ... 55 Hz, 1 mm Shock: 30 g / 11 ms Continuous shock: 10 g / 16 ms
International protection - housing	IP 20
International protection - terminals	IP 20
International protection - installation room (e.g. switch cabinet)	At least IP 54

Models**Operating voltage**

Type	Operating voltage
462 121 E1, 462 121 E1 01, 462 121 E1 U, 462 121 E1 U1	24 V AC/DC $\pm 10\%$ FELF (single-end grounding)
462 124 E1, 462 124 E1 U, 462 124 E1 01, 462 124 E1 10, 462 124 E1 U1	230 V AC $\pm 10\%$

Power consumption

Type	Power consumption
462 121 E1, 462 121 E1 U	150 mA
462 121 E1 01, 462 121 E1 U1	250 mA
462 124 E1, 462 124 E1 U, 462 124 E1 01, 462 124 E1 10,	20 mA
462 124 E1 U1	25 mA

Cooling-off period

The cooling-off period is the maximum time interval to elapse at a sensor between:

- the contact maker closing
and
- the contact breaker opening

Type	Cooling-off period
462 121 E1 462 121 E1 01 462 124 E1 462 124 E1 01 462 124 E1 10	300 ms
462 121 E1 U 462 121 E1 U1 462 124 E1 U 462 124 E1 U1	None

Control output (Models 462 121 E1 01, 462 121 E1 U1, 462 124 E1 01, 462 124 E1 U1)

Fuse	3.0 A
Max. switching voltage	250 V AC; 30 V DC
Max. switching current	3.0 A AC; 3.0 A DC
Max. switching power	750 VA or 90 W

LED displays (Models 462 121 E1 01, 462 121 E1 U1, 462 124 E1 01, 462 124 E1 U1)

LED at terminal	Color	Meaning
2	Green	Operating voltage is applied
7	Red	Input sensor 1: Sensor not actuated
8	Green	Input sensor 1: Sensor actuated
11	Red	Input sensor 2: Sensor not actuated
12	Green	Input sensor 2: Sensor actuated

LED at terminal	Color	Meaning
15	Green	Input sensor 3: Sensor actuated
16	Red	Input sensor 3: Sensor not actuated
19	Green	Input sensor 4: Sensor actuated
20	Red	Input sensor 4: Sensor not actuated
24	Red	Safety output switched off
25	Green	Safety output switched through

2 Appropriate use

The control unit is intended for use exclusively to protect against hazards.

2.1 Norms and guidelines

The control unit complies with the following European guidelines:

- 73/23/EEC (low voltage guideline)
- 2004/108/EC (electromagnetic compatibility guideline)
- 98/37/EC (machinery guideline)

The construction of the control unit conforms to the norms listed below:

Norm	Content
EN 954-1 / category 3	Safety of machines
EN 292	Safety of machines, basic concepts
EN 60204-1	Electrical equipment of industrial machines
VDE 0110, IEC 1010	Electrical safety
IEC 68, part 2	Effects of ambient influences
EN 61000-6-2	Electromagnetic compatibility, interference immunity for the industrial sector
EN 55011	Suppression of radio interference from electrical equipment

Models 462 121 E1, 462 121 E1 U, 462 124 E1, 462 124 E1 U

The control unit underwent an EU prototype test at TÜV/IQSE in Munich, Germany.

2.2 Safety/Dangers

- Ensure that the control unit is only installed and put into operation by specially-trained authorised personnel.
- Ensure that the appropriate corresponding fuses (see Technical Data) are used. Never bridge or repair fuses.
- Only operate the control unit when it's in an undamaged condition.
- Ensure that the control unit is only used for protection against dangers.
- Ensure that all safety requirements applying for the machine in question are observed.
- Ensure that all European guidelines and national laws/guidelines applying are observed.

Model 462 124 E1 10

- Ensure that terminals 10 to 23 of the control unit remain free.

3 Function

The control unit monitors sensors connected to it, which are equipped with a contact maker and a contact breaker each. The control unit switches its safety output according to the status of the sensors connected and external contactor, if connected.

The control unit switches off the safety output in the following situations:

- The contact maker of a connected sensor is opened.
- The contact breaker of a connected sensor is opened.
- A fault has been detected (control unit or connected sensor is defective).

4 Installation

General



Danger

▶ **Danger of electrocution!**

Ensure that the control unit is only installed and put into operation by specially-trained authorised personnel.

- Snap the control unit onto a mounting rail (DIN 50 022) in the switch cabinet. The control unit is attached.

Models 462 121 E1, 462 121 E1 01, 462 121 E1 U, 462 121 E1 U1, 462 124 E1, 462 124 E1 U, 462 124 E1 01, 462 124 E1 U1

- Connect control unit, see Technical Data.
- If the sensor input remains free:
Ensure that the contact makers of this sensor input are bridged.
- Ensure that the prescribed fuses are used, see Technical Data.

Model 462 124 E1 10



Caution

▶ **Possibility of damage to the control unit because of incorrect connections**

Ensure that terminals 10 to 23 of the control unit remain free.

- Connect control unit, see Technical Data.
- Ensure that the prescribed fuses are used, see Technical Data.

5 Putting into operation



► **Danger of electrocution!**

Ensure that the control unit is only installed and put into operation by specially-trained authorised personnel.

Danger

- If an external contactor is connected:
Ensure that the external contactor connected has powered off.
- Ensure that
 - all contacts at the sensor contact maker terminals are closed and
 - all contacts at the sensor contact breaker terminals are open.
- Apply operating voltage.

The control unit will perform an internal test.

The control unit checks if the external contactor connected has powered off.

As soon as the test has been finished successfully, the control unit switches through the safety output.

The control unit is ready for operation.

6 Troubleshooting

6.1 Restoring device to a state of readiness for operation

If the safety output was switched off by a sensor firing:

- Ensure that the external contactor connected has powered off.
- Ensure that the contact maker is open, and the contact breaker closed, at the sensor concerned.
- Close the contact at the same sensor's contact maker input.
- Within the cooling-off period, open the contact at this sensor's contact breaker input.

The control unit will perform an internal test.

The control unit checks if the external contactor connected has powered off. As soon as the test has been finished successfully, the control unit switches through the safety output.

The control unit is ready for operation.

6.2 Safety output remains switched off

- Check connections at input and output terminals:
 - Operating voltage
 - Sensors connected
 - Contactor connected
- Connections at inputs and outputs are OK:
 - Replace control unit.

7 Maintenance

The control unit is maintenance-free.

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